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Department of Urban and Regional Planning
University of Naples Federico II

Urban Sustainability and Parking Areas in Naples

a Tool for Decision-Makers

Carmela Gargiulo
Department of Urban and Regional Planning, University of Naples Federico II
e-mail: gargiulo@unina.it; web: www.dipist.unina.it

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ABSTRACT

The methodological target of this paper consists in setting up a supporting tool for the public decision-maker in individuating the areas for parking within urban territory. The construction of this tool is guided by criteria referring more to urban and regional planning choices than to transport ones and concerning mostly the integration among environmental safeguard, activities distribution and need for mobility. As matter of fact, the methodological route tends to join the morphological-settlement and environmental characteristics of the site with the demand for parking, which depends on the activities settled in the urban ambit of reference, considering them as keyelements in building compatible choices of city transformation either in the phase of localization, distribution and sizing of interventions or in the following phase of planning the building typology of parking equipments.
This paper shares the position expressed in the report on sustainable European Cities, destined to the local authorities of any city in the states of the European Union, which belongs to those documents targeted to affect the development and implementation of innovating policies and actions for promoting a more sustainable urban Europe. Therefore, the paper is divided into three parts.
The first part defines the algorithm showing the iter through which it is possible to define feasible and compatible solutions for envisaging localization, distribution and typology of the areas and spaces to be realized. The second part, through the real implementation in a particular case, the city of Naples, deals with the definition of further criteria that are time by time implemented according to the urban context of reference. The tird part deals with the application to Naples and individuates a specific typology of parking areas, as implementation of the worked out algorythm and of the above-said criteria. The central part of the paper deals, then, with defining a route through which, among the possible transformations, the feasible alternatives are univocally individuated according to the environmental, historical and geo-morphological compatibilities and on the base of the expressed demand. All the building process is targeted, from its beginning, to reach desired and chosen aims with the awareness, confirmed by the previous analysis phase, that there are limits, bonds and conditions circumscribing the field of physical transformation planning - concerning the parking realization in this case - within well defined boundaries. Although this paper shares the choice of mobility policies targeted to stop and discourage the vehicles transit in the city downtown and against the realization of parking in those areas, nevertheless the suggested algorithm leads to realize exclusively areas for residential parking in historical central areas.

The methodological target of this paper consists in setting up a supporting tool for the public decision-maker in individuating the space for parking areas within urban territory. The creation of this tool is regulated by criteria directed more to urban and regional planning choices than to transportation ones and concerning mostly the combination of environmental safeguard, activities distribution and need for mobility (Beguinot and Papa 1995). As a matter of fact, the methodological course tends to integrate the morphological-settlement and environmental characteristics of the site with the demand for parking, which depends on the activities in the urban area of reference, considering them as key-elements in building compatible choices in city transformation, both in the localization, distribution and sizing of interventions phase and in the next planning of the building approach for parking equipments phase. This paper, referring to a wider study (Papa and Gargiulo 2000), is divided into three parts. The first part defines the algorithm showing the process through which feasible and compatible solutions of localization, distribution and typology of parking areas and spaces planning are developed.

The second part deals with the definition of additional criteria that are progressively implemented according to the urban context of reference. The third part deals with the identification of relationship parking areas in Naples as example of the developed algorithm and of the above-said criteria.

The leading idea of the whole work aims at discouraging the vehicles transit in the consolidated urban areas and, therefore, at avoiding the localization of parking lots downtown, considered as additional elements in attracting traffic flows.

A tool for compatible transformation areas

The location of single areas in wich realizing parking lots has been individuated, as shown in the following pages, also according to the analysis of parking areas, exchange, relationship and residence demand, and represents the base of the supporting tool for decision-making shown afterwards.

The target consists in conceiving a route though which, through all the probable transformations, it is possible to univocally individuate the achievable alternatives in accordance with the environmental, historical and geo-morphological compatibilities and on the basis of the expressed demand for parking.

All the construction process is addressed, since the beginning, to reach desired and chosen purposes with the awareness, confirmed by the previous analysis phase, that there are limits, bonds and conditions reducing the field of physical transformations planning, regarding in this case the realization of parking areas within well defined boundaries.

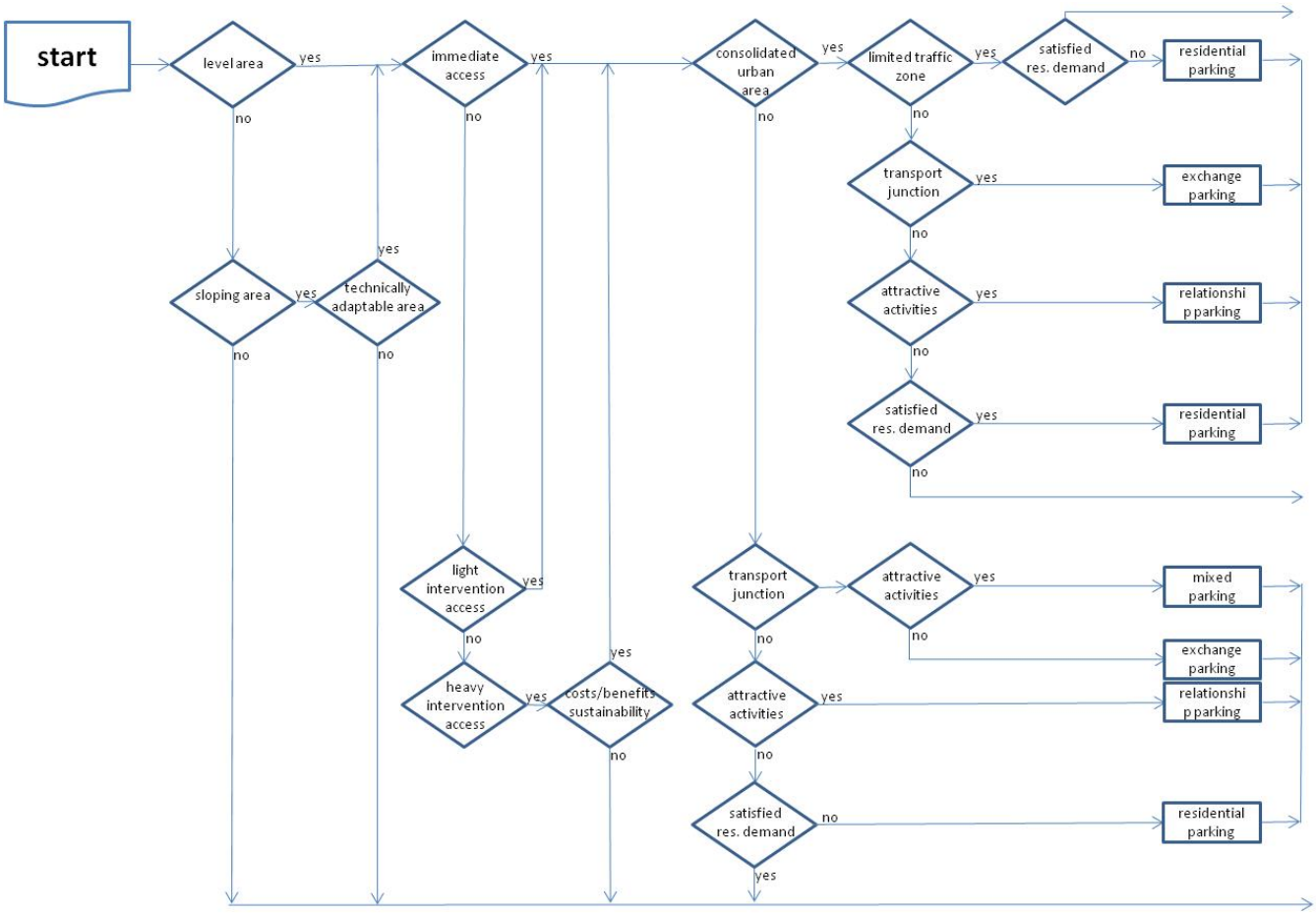
Each single query, included into the diagram or algorithm, has been individuated as crucial element for the final project choice. The diagram has been built comparing alternatives.

That comparison among choices has been made by using both quality judgments and criteria of quantity calculation.

The main object of comparison are the benefits arising from each action alternative.

The above-said comparisons are essentially useful for the following goals:

– individuating the choice allowing to reach the maximum benefit among all the achievable ones under the same conditions;
– assuring project interventions compatible, from the environmental, morphological, geological and perceptive point of view, with the urban tissue where it is placed the area chosen for parking;
– assuring project interventions appropriate to the parking demand expressed by the urban context of the area where the parking spot will be built.



In other words, a flux diagram has been worked out according to a regular sequence of queries, hierarchically and logically linked to each other, whose route leads to determine a rational and compatible project choice. Each query, representing a discriminating element in order to determine the project alternatives for parking, is built on a number of themes and problems referring to a single common matrix: for example, the query in a *limited traffic zone* "synthetically" includes some information about the historic value and the artistic-architectural-archaeological quality of the area.

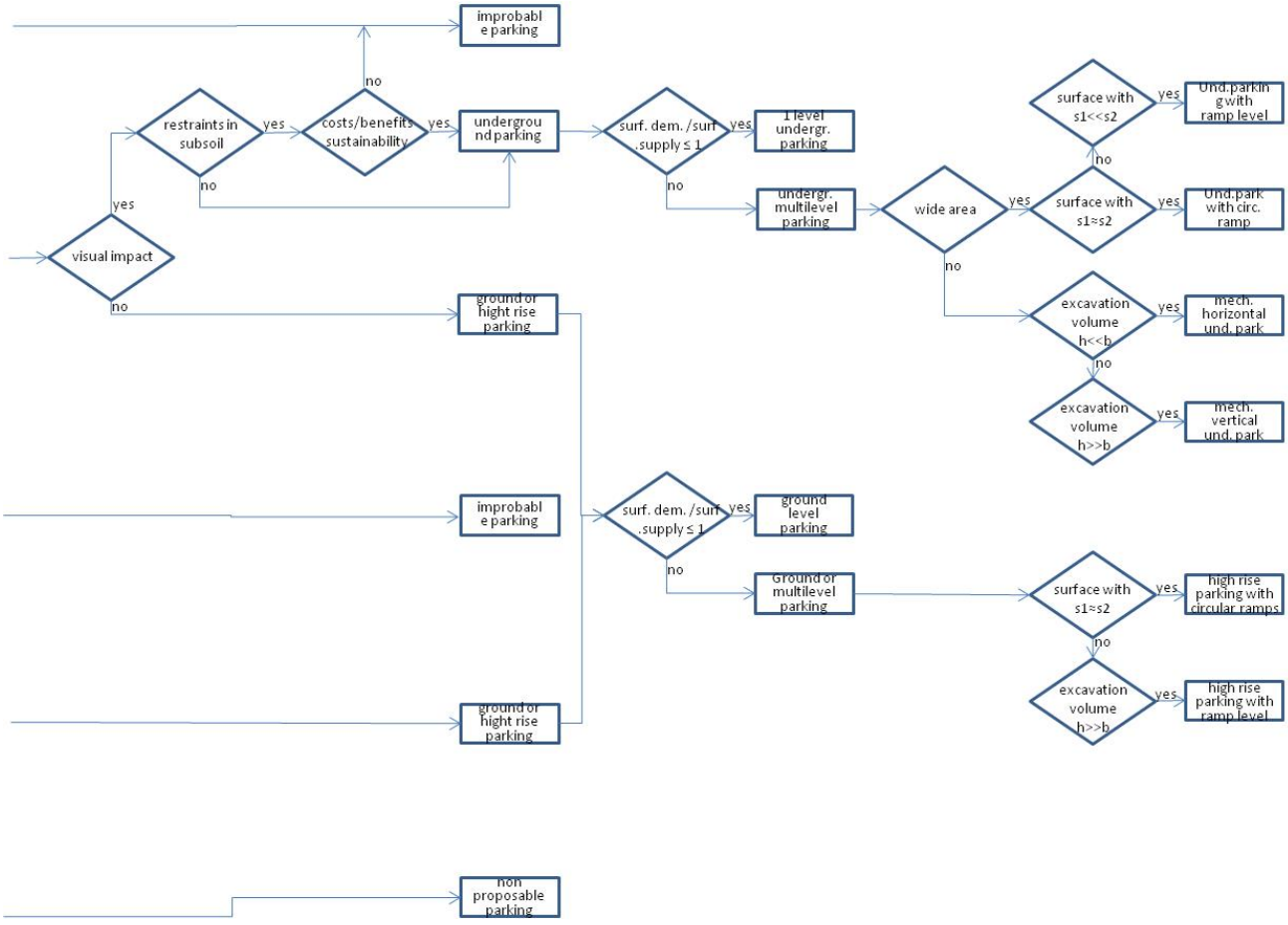
The query sequence, the whole course consists of, refers to three main phases for realizing the parking area: the project feasibility; the typology of the parking area to be realized; the projectual solution to adopt in order to build the parking area.

Consequently, the starting point is given by the information on the area morphology as first important discriminating element for the algorithm's objective.

In sequence, the second discriminator refers to the modality of access to the area on which the parking lot will be built.

The queries shaping this step are three: immediate access; access with interventions of modest entity; access with important works.

Each of them leads, through different routes, to the next discriminator query, *consolidated area*, which contains indications regarding: the centrality of the area in relation to urban context, to resident population density in the area; to the intensity of area use; to the compactness of the area. The following query, the previous ones lead to, is the "synthetic" question about *limited traffic zone* that, as said above, contains also information about: the historical value of the urban tissue where the area destined to parking is located; the architectural, urban planning, artistic and archaeological quality of the urban tissue where the area destined to parking is located. If the choosing alternative, as to the last two described enquiries, it's the negative one, the course leads to verify whether in the urban area, which has no characteristic of consolidated area nor of a limited traffic zone, there are, in alternation between them, exchange nodes, polarizing functions or if the demand for permanent parking is satisfied.



Through this last step, the course leads to individuating achievable typologies of parking. To obtain that, the progress arising from the passage to *consolidated urban area,* it develops considering the compatibility between *visual impact* and *restraints in subsoil*.

In particular, the query about *restraints in subsoil* refers to geological and archaeological restraints and/or restraints depending on the presence of infrastructural networks placed underground. Besides, the course individuates another choice, this time a financial one, regarding the *sustainability* of costs in comparison to *benefits* obtained by realizing the parking lot.

That last query is useful in understanding whether the construction of the parking lot, even when it is required by an "unsatisfied demand", can be proposed or not. If, after compatibility test on which the course is built, the realization of the parking lot can be proposed, the project possibilities of the structure destined to parking are three: underground lot, ground lot, high rise parking lot.

In order to better specify the project characteristics of the parking lot to build, the course leads to the query on the ratio between the area required to meet the demand for parking and the individuated area representing the usable supply.

When that ratio's result is equal to 1, the demand can be met by building one-level parking lot. In details, if the course issues from the possibility of realizing an underground parking, this one level parking lot should be realized under the ground floor otherwise it can be built on the same floor.

When the ratio between the area needed to meet the demand for parking and the individuated area is smaller than 1, it might be necessary to realize more levels of surface destined to parking.

In that case the course leads to identify two solutions: underground multi-level parking lot and ground multi-level parking lot.

The algorithm goes on, on the course deriving from the *underground multilevel parking lot,* with a demand about the size of the available area.

The projectual alternatives of that query are the following two: underground parking lot with ramps; mechanical underground parking lot.

The first type of parking lot can be realized in a big-sized area, while the second one on a small-sized area. A mechanical parking lot, in fact, allows to use almost all the surface for cars stall since a very small space is necessary for achieving the stall.

The last step of query refers to size parameters affecting the shape of the structure destined to parking. A first group deals with the size of the area and a second group deals with the volume of the excavation for the underground parking lots.

The first group of queries, in the case of underground multi-level parking lots with ramps and of ground multi-level parking lots leads to the following structures:

– underground parking lot with ramp level;
– underground parking lot with circular or rectilinear ramps
– ground parking lot with ramp level;
– ground parking lot with circular or rectilinear ramps
– depending on whether the sides of the surface are identical or one side is longer than the other one.

The second group, referring to the volume of the excavation, helps individuating two different possibilities of realization – mechanical underground parking lot with horizontal mechanism and mechanical underground parking lot with vertical mechanism – depending on whether the height of the excavation is smaller than the base of the excavation or greater than the base of the excavation.

Context Criteria to establish parking areas in Naples

Before tackling the detailed examination of the areas destined to parking within the municipal territory of Naples, it is necessary to define the specific criteria to adopt considering the particular urban situation. In other words, according to the particular characteristics of the settlement and geo-morphological structure and the urban policies adopted in the Neapolitan situation, it is necessary to specify the context criteria in order to individuate the parking areas (Papa and Gargiulo 1996).

Because of the particular density of the central areas of the Neapolitan context, aside the exchange, relationship and residence parking lots, it was necessary to define two additional typologies of parking areas: the mixed parking lots that are areas or volumes destined to both relationship and residence parking, and the integrated parking lots that are meant for structures in which part of the levels is destined to parking (of exchange, relationship or residence) and the rest is destined to public and/or public use facilities.

The aim moving the choice of the criteria for detecting the areas destined to –relationship, residence, mixed (relationship/residence) – parking, can be found in the intention of reducing the impact that building, but also the use, of parking lots will produce on the mobility system and, more in general, on the harmony of the whole urban system. In other words, inside each urban area (Area of Balance – AE), the inspiring criterion used in determining the single areas is the rule of the minimum impact on the following elements:

– the consolidated resources of the infrastructural-building stock, meant as all the capitalization stocked by man in the course of time (first of all the artistic, architectural, environmental ones, but also the infrastructural one);
– the transfer flows on the network of inter-district and district transfer;

– the vacant sites that can be better destined to other public and/or of public use facilities.

Starting from those "guiding targets", the criteria of the Neapolitan urban context, used in defining the parking areas, can be classified according to the minimum impact on the above said three elements. Consider that the areas meeting the majority of criteria have been chosen.

The following criteria have been chosen in regards to the" minimum impact on the consolidated resources":

– the safeguard of the areas with recognized environmental (artistic, architectural, historic and landscape) value;
– areas with public or private parks and gardens;
– areas destined to agricultural use.

According to the above-said criterion the areas inside the historic centre have been excluded, taking into account that a ground parking lot produces a strong environmental-landscape impact, and that building an underground parking lot, almost surely, compromises the archaeological resources characterizing the historic centre of Naples.

Referring to the" minimum impact on the relevant transfer flows", the following criteria for the parking-destined areas have been chosen:

1. The reduction of the "conflicts" with the ordinary traffic circulation.

For this purpose preferred areas are those for which the realization of the parking lot produces, both in the building and implementing phase, the minimum impact on the existing mobility.

2. The use of blind alleys and local roads, mainly for residents parking lots. This criterion has allowed to individuate many underground parking lots for residents mostly in those areas where the demand for parking is high and the areas available are scarce.
3. The satisfaction of the increasing demand for tourist parking. Those areas have been planned mostly around the borders of the consolidated urban tissue near the rail/road exchange nodes, in order to avoid the overlapping of tourist flows with ordinary mobility.

In regards to the "minimum impact on the availability of areas that can be destined to other public and/or of public use facilities", the following criterion for the parking-destined areas has been delineated:

4. The safeguard of the areas that, in regards to their distribution and position, can be better used for settling urban (standard) facilities.

Finally, in regards to the clearing of cars parked in plazas with historic-artistic-environmental value, in order to restore their social and community life, it has been planned, where possible, the construction of underground parking lots near the plazas invaded by parked cars, whose clearance allows the social and perceptive recovery in that particular urban environment.

The individuation of relationship parking areas

In accordance with the above-defined context criteria and on the basis of the algorithm supporting the localization consistent with the geo-morphological and settlement characteristics of the urban territory, in the last phase of the work, the areas destined to parking within Naples city boundaries have been defined, and they have been articulated according to the parking typology. Moreover, this articulation is based on the analysis of the demand and supply of parking zones carried out in the wider research work.

This report tackles only the individuation of parking zones for the relationship parking (as it is defined in the Law 122 of 1989) and the definition of the reasons affecting the choice of those zones, by synthetically referring to the guiding criteria, to the algorithm supporting the decision-makers and, of course, to the analysis outcome on the parking zones demand and supply.

The relationship parking lots involve both the interventions targeted to foster vehicle traffic fluency on the city main road system, and those interventions targeted to help use urban pedestrian areas or limited traffic zones by allowing private car parking only for limited periods of time (D.M. n°41 dated February 14th 1990).

One of the main goals of those interventions consists in removing vehicle parking along the city main traffic flow areas with particular attention to the central areas. Note that the central areas are characterized by a high compactness of urban tissue and, therefore, by a limited availability of vacant sites to be destined to parking, as well as a significant concentration of activities attracting a great deal of traffic flows.

In some cases, the demand is so high that makes it impossible to offer new elements capable of abating at least the highest "peaks". However, in the relationship parking too, the phenomenon of demand, and in particular its territorial distribution, should be reviewed and analysed together with several elements and variables.

The relationship parking shows aspects and peculiarities that are to be necessarily investigated with care, because it affects almost the whole system of mobility and establishes strong relations with the city functional system.

From that point of view it's necessary to define a system of relationship parking based on a network typology able to localize its nodes of supply within those territorial areas, and/or along those circuits, for which the demand values are higher.

That demand should be calculated, then, according to the surface data of the area it refers to.

This allows to uniform the demand values according to a territorial reference in a more useful and meaningful way for the intervention.

Focusing at detecting the relationship parking areas not clashing with the indications contained into the other two plans of urban mobility governance (PGTU and PCT), it should be mentioned that, in regards to parking lots typology, the PGTU excludes the possibility of localizing them within the central and more consolidated urban tissue, because it considers those parking lots as additional elements attracting mobility.

Therefore it suggests locations outside that ambit and strategically placed in a way that doesn't produce synergic effects of attraction.

In the PCT, as to central areas, it is suggested a special tariff policy to discourage long-lasting parking and to foster the fast turn-over of parking.

Consequently, it is expected the possibility of entailing relationship parking zones within the central areas too, which should be managed by a proper park-pricing as it has been already implemented by Naples Municipal Administration.

The expected network system entails also the integration among transfer modalities which could allow to move the supply nodes outside the boundaries of the city area with the highest functional density. All that should be supported by territorial references considering, in any case, the distribution of the demand. In details, this part of the study, aimed at localizing the areas for relationship parking, is divided into the following three steps: the study of the demand for relationship parking, the individuation of the demand distribution and, finally, the location choice.

Fig. 1 - Unsatisfied relationship parking demand compared to the territory (parking spot per ht) and the six "functional" arteries. Darker grey areas show higher unsatisfied relationship parking demand

From the first step, it is evident that the territorial distribution of the (mere) data concerning the unsatisfied demand for relationship parking does not give univocal indications, describing a spotty trend of values or a trend with little continuity.

By making a territorial reference of the data, computing the ratio between the demand for relationship parking and the size of each balance area, a more homogeneous and important territorial planning can be achieved. In particular, the urban territory can be arranged according to the three levels of demand.

A first level of high and/or very high demand, which defines a concentration characterizing mainly the central areas of the consolidated urban tissue; a second level of medium demand, which defines four agglomerations consisting of balance areas placed in a radial arrangement according to six arteries, with other two important concentrations represented by the BA of Mostra, Tecchio, Leopardi, Augusto, p.co S. Paolo and M.te S. Angelo and by B A of Policlinico; a third level of low or null demand is distributed on the remaining balance areas representing more than 60% of the total.

Therefore, considering the above-said values, it is possible to distinguish three different territorial areas where to articulate the network of relationship parking. A first area is represented by the territory with the highest density of urban activities that later will be called "functional city". So it is possible to distinguish a first circle, spiralled around the functional city, made up of BAs placed along the pointed out arteries.

In order to obtain indications useful in sizing new settings, it has been worked out an assessment of the supply deficit for the first two areas described. Since the deficit values are very high, it has been necessary calculating the area to find within each area, to at least meet the town planning standards provided for by the DM 1444/68 for the areas destined to parking.

Taking into account the objective impossibility to find areas capable to meet these needs, the demand could be reduced by entailing sites placed, as said before, according to a network capable of strongly reducing the access to central area. Inside the functional city it is difficult to foreshadow important interventions for several reasons resulting from restrictions systems such as:

- the proposals of town planning for the historical and central urban areas;
- the underground archaeological peculiarities;
- the proposals of the laws n. 1089 and n.1497;
- the proposals of the landscape plan;
- the proposals of the other tools governing the mobility system (PGTU, PCT);
- the policy of the Administration, widely shared, targeted to discourage the use of private car to reach central functional sites.

A.E.	Nome	Utenti attratti	Domanda di sosta	Auto uscenti dall'A.E.	Offerta esistente	Deficit offerta
59	Torretta	12.561	4.087	518	233	3.854
62	Villa comunale	6.614	2.152	419	188	1.964
63	Chiaia	5.936	1.931	473	86	1.845
66	Chiatamone	518	169	270	118	50
67	Monte di Dio	5.269	1.714	405	82	1.632
68	S. Lucia	12.855	4.182	370	226	3.956
69	Municipio	12.412	4.038	574	62	3.976
70	Matteotti	20.133	6.550	458	151	6.399
71	Piazza Borsa	17.872	5.814	437	235	5.579
72	Montesanto	6.856	2.230	222	77	2.153
74	Quartieri Spagnoli	4.969	1.617	522	172	1.444
75	Dante-Tarsia	8.299	2.700	509	145	2.555
76	Neapolis	15.029	4.889	404	118	4.771
86	Università	11.488	3.737	382	113	3.625
	TOTALE		**45.811**		**2.008**	**43.803**

Table 1 - Relationship parking offer and demand during critical hours

After what said above, then, it is possible to foreshadow, in different ambits, a differentiated articulation of the network consisting of a central grid, for the functional city, where there is a diffused relationship parking supply represented by the existing parking areas and by new car spaces (blue lines) provided for by the Administration.

In this area it is impossible to place important nodes of supply. The relationship parking network, crossing the borders of the functional city is settled near the six functional arteries identifying specific nodes of supply.

Then, in the second step it is achieved the radial distribution along the individuated six functional arteries, which shows that the functional sites have been placed along the preferential directions corresponding to the penetration axes into the functional city. Therefore, it is possible to identify, for each pointed out artery, a corresponding road axis representing the main corridor of access, for each of them it is identified a final point, which represents the contact and/or entrance site to the functional city. Along those channels, inside the first belt of the ring, the new sites of the relationship parking supply are to be planned.

Those parking lots, placed strictly near the functional city, help reduce the vehicles flows directed to the central area, offering a valid alternative to the choice of parking inside the area.

However, it is important to point out that a part of the relationship parking supply found in this belt is fulfilled by the exchange parking lots planned in the areas near the BAs and belonging to the first ring.

Finally, it is worth mentioning that, in regards to the areas included into the second ring, the calculation of the supply deficit does not show the need for intervention by widening the above-said network. In that ambit there are, anyway, some “nodes”, produced by few isolated functions, for which punctual solutions are to be expected.

From the above-shown analyses and charts, the third step aims to identify the areas destined to relationship parking. In regards to the central area, the suggested supply is represented, other than the regulated road parking (blue lines), by two new built parking lots. The first has a barycentral position within the area, since it is placed in Piazza Matteotti where the demand for relationship parking is particularly important because of the high concentration of public structures of urban and metropolitan governance and management.

The settlement characterized by buildings of the Thirties, represents the Neapolitan City. Besides, that parking lot has a strategic position because it is located into an area adjacent to Via Toledo (which the PGTU outlines as limited traffic zone) and Piazza S. Maria La Nova (pedestrian area) and it is in close proximity to the historic centre pedestrian areas. For this area it is suggested a three-level underground parking lot containing 350 cars for the exclusive use of the institutions located in the area.

The second parking lot of the central area has, on the contrary, a fringe position, since it is placed in via G. Bruno; also in this case the structure proposed is a two-level underground parking lot containing 250 cars.

Before the detailed description of the first ring areas destined to relationship parking, it is necessary to make some considerations.

First of all, areas have been considered that are closer to the points identified as terminals of the penetration axes.

A.E.	Nome	Utenti attratti	Domanda di sosta	Auto uscenti dall'A.E.	Offerta esistente	Deficit offerta
7	Carelli	2.680	872	204	38	834
14	Parco S. Paolo	3.159	1.028	382	239	788
15	Tecchio	4.173	1.358	393	266	1.091
16	Leopardi	8.065	2.624	1.039	433	2.190
18	Augusto	4.636	1.508	640	335	1.173
21	Mostra	9.399	3.058	299	216	2.842
29	Monte S. Angelo	5.195	1.690	246	91	1.599
34	Giustiniani	4.944	1.608	427	89	1.520
42	Policlinico	5.095	1.658	236	131	1.526
48	Medaglie d'oro	14.197	4.619	768	371	4.248
53	Vomero	5.756	1.873	396	144	1.729
54	S. Martino	4.969	1.617	519	225	1.392
55	Floridiana	5.839	1.900	420	66	1.833
56	Aniello Falcone	5.532	1.800	370	32	1.768
77	Castelcapuano	7.096	2.309	418	141	2.167
78	Sanità	8.297	2.699	542	164	2.535
80	Miracoli	8.191	2.665	516	203	2.462
81	Borgo S. Antonio	10.254	3.336	655	296	3.040
82	Ponte di Casanova	11.654	3.791	285	173	3.618
83	Vasto	4.136	1.346	325	139	1.207
85	Carlo III	7.856	2.556	356	124	2.432
87	Piazza Mercato	12.765	4.153	438	81	4.072
88	Borgo Loreto	7.538	2.452	416	132	2.321
115	Doganella	4.885	1.589	385	206	1.383
120	Centro Direzionale	9.627	3.132	469	198	2.934
123	Gianturco	9.091	2.958	499	369	2.589
	TOTALE		**60.196**		**4.902**	**55.294**

Table 2 - Relationship parking offer and demand in the first circle area during critical hours

This choice is related to the width of the central basin; in fact the chosen areas, indeed, can properly play their role of relationship parking only if they are placed in the closest proximity to the most important agglomeration of urban functions and near the most significant road axes.

Moreover, in the areas specific definition, the chosen areas have been the ones that, although showing the necessary centrality, would be placed either in a position which would not slow up the vehicle circulation, because of drivers looking for parking, or in such a way as to hit the target of centre decongestion, by transferring as much mobility demand created by urban functions to the public transport system – which should be improved and modernized. Then it becomes possible to describe the single interventions proposed for each penetration axis.

In regards to the first of them, related to the east area and placed on the arteries of via A. Vespucci – via A. Volta – via Reggia di Portici – via Ponte dei Granili – via Ponte dei Francesi – Corso S. Giovanni a Teduccio, it has been suggested to devote part of the existing parking lot on via Brin to the relationship parking.

That choice originates also from the morphology and settlement characteristics of this axis terminal part: the area of Piazza Mercato, characterized by high population density, by the presence of several commercial activities, by a rich and dense tissue of architectural and historical buildings. For the above-said reasons important transformations inside this tissue have been avoided and, given the lack of vacant sites, an existing structure, has been destined to this typology of parking. This structure, indeed, with its 1,340 car spaces and an area of 31,850 sq.m., can satisfy, apart from the exchange parking, also the relationship parking because of its proximity to piazza Mercato and of its present underutilization as well.

Similar considerations have been made on the second penetration axis identified in the segment via Casanova – via Nuova Poggioreale – via Stadera for which the located terminal point is piazza S. Francesco and piazza E. De Nicola.

In this case too, existing parking areas can be used and in particular the two structures under construction placed on the pointed out artery: the parking area in piazza S. Francesco and the adjacent piazza Nazionale. In both cases the dealt-with structures are multi-storey three-level underground ones with 415 and 1.155 available car spaces respectively.

A third defined penetration axis is the one placed in via Foria and the terminal point of piazza Cavour. In this case too there was no possibility of finding parking areas in the closest proximity to the terminal point, which represents a crucial point in the historic centre for many reasons, such as the confluence of via Foria into via Pessina and via S. Teresa degli Scalzi, Museo Nazionale, Galleria Principe di Napoli. Here the selected area, although being far from the terminal point, is easily reachable from piazza Carlo III, another traffic crucial node of the east central area. The pertinent area is placed in via Cavallotti, where it would be possible to build a two-storey multi-level underground parking lot for 180 car spaces in total.

The fourth penetration axis converges with corso A. Di Savoia and via Miano, whose terminal point is represented by the hemicycle of Capodimonte. In this case there was no possibility of finding either a vacant site or an existing structure close to the terminal point concerning the densely populated areas of S. Teresa, Stella and Materdei.

The fifth axis starts in correspondence of the ring road junction of Vomero and winds down via Cilea as far as the crossroad with via L. Giordano. In this area it has been suggested to build a multi-storey three-level ground level parking lot containing 400 car spaces to be realized near the ring road junction and so 700m far from the terminal point.

Finally, in regards to the sixth penetration axis, coinciding with the artery viale Kennedy – viale Giulio Cesare, the terminal point suggested is the entrance of the Posillipo tunnel.

The area destined to parking has been identified near the metropolitan station of piazza Leopardi, along via Giulio Cesare, where it would be possible to build a ground level five-storey structure for 880 car spaces in total. Together with the individuation of relationship parking areas placed near the above-said penetration axes it is possible to define, in proximity to some functional poles, areas capable of meeting, at least partially, the demand for relationship parking.

In particular, in regards to Furorigrotta functional pole, it is considered that the demand for relationship parking can be met by the existing road regulated parking spaces (blue lines) and by an existing parking lot placed in via Terracina.

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